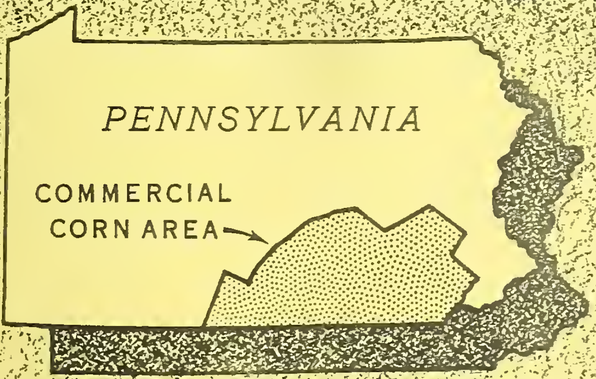
Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

FM-22

FARM MANAGEMENT ADJUSTMENTS TO MEET *Corn Acreage Allotments*



UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF AGRICULTURAL ECONOMICS
AND
AGRICULTURAL ADJUSTMENT ADMINISTRATION

WASHINGTON, D. C.
APRIL 1941

FARM-MANAGEMENT ADJUSTMENTS TO MEET CORN ACREAGE ALLOTMENTS

By
Richard G. Wheeler, Assistant Agricultural Economist
and
Irving F. Fellows, Junior Agricultural Economist
Bureau of Agricultural Economics

CONTENTS

	Page
Preliminary considerations	1
Area studied	2
Types of adjustments	3
Shifting acreage to green-manure crops	4
On a dairy farm	5
Increase in net farm income per acre of green-manure crops substituted for grain corn	6
Shifting acreage to seeded pasture	7
Questions and answers about ladino clover	9
On a dairy farm in the General-Farming Area	10
On a dairy farm in the Quaker Dairy Area	14
Increase in net farm income per acre of ladino clover pasture mixture substituted for grain corn	15
Shifting acreage to legume silage	17
On a steer-feeding farm	19
On a dairy farm	22
Shifting acreage to alfalfa hay	25
On a dairy farm	25
On a dairy and steer-feeding farm	28
Shifting acreage to barley	31
On a steer-feeding farm	31
Increase in net farm income per acre of barley substituted for grain corn	34
Shifts which involve secondary adjustments in livestock	36
Steers replaced by dairy young stock on a general farm	36
Steers replaced by dairy cows on a general farm	41

PRELIMINARY CONSIDERATIONS

For the first time, a part of Pennsylvania has been included in the "commercial corn area." In 11 counties in southeastern Pennsylvania, corn-producing farms were chosen to receive corn acreage allotments under the 1941 Agricultural Conservation Program. Therefore, many farmers in this area must choose between (1) planting within the corn acreage allotments or (2) foregoing conservation and parity payments for corn.

Many farmers are interested in the adjustments in the management of their farms that can be made to most advantage if corn acreage is reduced. Because of this widespread interest in a systematic analysis of alternatives to corn, representatives of the Bureau of Agricultural Economics and the Agricultural Adjustment Administration have worked with community committeemen and representative farmers in a study of opportunities for farmers to readjust their systems of farming in such a way that they will plant within their corn acreage allotments 1/. This report is a summary of some of the adjustments suggested or approved by local farmers for representative farms within the area.

These representative farms were selected with the assistance of local committeemen to illustrate various types and sizes of enterprises commonly found in the area. Farm plans have been prepared to show the probable effects of adopting certain adjustments on these farms. Each plan shows how a specific change can be fitted into a specific farm organization and how net farm income will be affected. As no two farms are exactly alike, each farmer must eventually adapt any representative plan to his own situation. These plans illustrate the factors to consider in planning adjustments, and for similar situations may be applicable with only slight modification.

To apply the results of these farm plans more generally, tables have been prepared showing the probable results of certain adjustments under varying conditions of yield, price, and cost. In using these tables, modifications must also be made for the individual farm situation.

This report is made available to farmers and representatives of the Agricultural Adjustment Administration to indicate types of adjustments which may accompany compliance with the 1941 corn allotment program, to indicate the factors which should be considered in planning adjustments for individual farms, and to show how certain adjustments apply to representative farm situations.

AREA STUDIED

Well-known as a successful, diversified farming area, southeastern Pennsylvania follows numerous cropping systems, but most of these are variations of a basic 4-year rotation of corn, oats, wheat, and hay. Corn for grain and silage is grown on about 25 percent of the cropland. County average yields range approximately from 40 to 55 bushels of shelled corn per acre. Dairy, steer feeding, and poultry are the principal livestock enterprises.

1/ The authors consulted frequently with State, county, and community Agricultural Conservation Program committeemen and with members of the staffs of the Soil Conservation Service and Pennsylvania State College during the preparation of the farm plans included in this report. Mr. Arnold C. Lane of the Department of Agricultural Economics of Pennsylvania State College assisted in part of the field work.

Differences in types of farming make possible the indication of three subareas. On the limestone soils in the central part of Lancaster County, tobacco and truck crops take the place of oats in the rotation. This Crop-Specialty Area might also include adjoining parts of York and Chester counties where market vegetables and canning crops are grown. Steer feeding is centered on the tobacco farms. South and east of the Crop-Specialty Area is the Quaker Dairy Area, where milk is produced for the Philadelphia Market. North and west of the Crop-Specialty Area is the General-Farming Area in which crop yields are lower and less intensive dairying predominates.

TYPES OF ADJUSTMENTS

With a reduction in corn acreage, two types of adjustments may be involved: (1) The substitution of other crops for corn; (2) changes in production practices and in the kind or numbers of livestock kept.

Among the more important crops which may be grown in place of corn are the following:

(1) Sweet clover or other crops for green manure.

(2) Ladino clover mixtures, white clover and bluegrass mixtures, lespedeza, or sudan grass for pasture.

(3) Alfalfa, clover, or soybeans for silage.

(4) Alfalfa, clover, or soybeans for hay.

(5) Barley or soybeans for grain.

Various other shifts may be desirable on certain farms. Increases in cash crops are limited by other allotment programs. In some cases the land may be left idle.

To use increased quantities of pasture, silage, or hay profitably usually requires adjustments in livestock feeding. These will be in the direction of less grain feeding, and particularly toward less use of expensive, high protein concentrates. In a few cases, changes in the type of feed available may make desirable a change in the type of livestock kept. With an increase in the amount of high-protein roughage available, for example, a shift from steers, which require large amounts of low-protein concentrates, to dairy cows or young stock may eventually be desirable.

Such changes in crops, livestock, and production practices, should make possible, in many cases, compliance with the allotment program, an increase of conservation on the farm, and the maintaining of net farm income. Calculations in this report are based on the assumption that 30 percent of the usual corn acreage will be shifted to some other crop, and that corn allotment and parity payments will total 14 cents per bushel of the normal yield. On most farms, therefore, the payments for compliance will be large enough to replace nearly half the reduction in the quantity of corn grown.

Frequently the soil-building allowance will cover some of the costs of seeding the substitute crop.

Four factors will have special bearing on any shift from corn in this area. The reduction in labor requirements which will result on many farms will be especially important in view of the present outlook for a smaller supply of farm labor. Loss of export markets for grains and livestock products and its effect on the demand for corn should also be considered in appraising the future outlook. The recent introduction of hybrid seed corn has tended to increase yields; its wider use may be expected to have a favorable effect on future yields. On the other hand, damage from the Japanese beetle has been increasing in this area. In planning adjustments, farmers should consider not only their past experience with corn, but also the probable effects of these trends.

SHIFTING ACREAGE TO GREEN MANURE CROPS

Substitution of green manure crops for corn is an adjustment that can be considered on every farm affected by the 1941 corn allotment program in Southeastern Pennsylvania. In most cases, the immediate effect of this adjustment will be a slight decrease in net farm income. Many farm leaders believe, however, that farm incomes would be increased if farmers throughout the country adopted the practice of taking some acreage out of harvested crops.

From the viewpoint of the individual farmer, the direct advantages of a shift to green manure crops include:

(1) Compliance with the corn allotment program.

(2) Reduced cash expenses.

(3) Increased average corn yields.

(4) Increased acreage or erosion-resistant crops.

(5) Increased soil fertility on the shifted acreage.

Allotment and parity payments to farmers in compliance with the program will replace an important part of the reduction in the amount of corn grown. In general, cash expenses for fertilizer, seed, and labor will be reduced. With the present outlook for a smaller supply of farm labor, any reduction in labor requirements will be of especial importance. Even on farms which have no cash expense for hired labor, the shift would mean less work for the operator.

In many cornfields are dry hillsides or low spots which could be seeded to green manure crops without materially reducing corn production. Manure formerly used on these areas could be applied to the remaining corn acreage. These two steps would bring about an increase in average corn yields for the farm. Meanwhile, soil fertility on the shifted acreage would be increasing, and this land would be seeded to an erosion-resitant crop.

Estimated effects of substituting a green manure crop for corn on a representative farm, and with varying yields and costs in ordinary farm situations, are discussed in the following sections.

On a Dairy Farm (Farm A)

The farm - A 10-cow dairy farm in the general farming area.

Proposed adjustment - Shift acreage from corn for grain to a sweet clover green-manure crop.

Present business organization - This 103-acre farm was chosen as representative of many farms in the general-farming area, where yields of most crops are lower than in the specialized areas. In 1940, 95 acres were in cropland. Corn for grain was grown on 18 acres with an average yield of 40 bushels an acre. Other crops included wheat, barley, oats, alfalfa hay, and clover hay (table 1). The operator is a share-tenant. The owner receives half the grains. The tenant's share of the grains, all of the alfalfa and clover hay, and part of the corn stover are fed to the livestock (table 2).

Table 1.- Crops on Farm A in 1940

Kind	Acres	Production
Corn for grain	18	720 bu.
Wheat	28	500 bu.
Barley	13	300 bu.
Oats	3	60 bu.
Alfalfa hay	4	8 tons
Clover (1 cutting)	20	25 tons
Cropland pasture	9	
Total cropland	95	
Permanent pasture	3	
Other land	5	
Total land	103	

Table 2.- Livestock on Farm A in 1940

Kind	Number
Cows	10
Heifers	4
Bull	1
Brood sows	2
Hogs	6
Hens	60
Mules	6

The revised plan - Table 3 indicates the estimated changes in annual costs and returns which would result from shifting 5.4 acres of grain corn to sweet clover for green manure. Cash expenses for fertilizer and labor will be reduced. It is estimated that corn allotment and parity payments will increase receipts by $71. If land producing average yields were shifted to the green-manure crop, it would be necessary to buy 215 bushels of corn to equal the 1940 crop. If the green-manure crop is seeded on areas where the corn yield is below the average for the farm, the decrease in corn production will not be proportional to the decrease in acreage. The larger amount of manure available for use on the remaining acreage will also increase yields. As a result of these two factors, it is estimated that the average corn yield for the farm will be increased 5 bushels an acre, and only 153 bushels will be bought. The corn stover is not all used at present, and the decrease in the amount available will not be a problem on this farm. The estimated decrease in net farm income is only $14.

In cases where a good clover sod is to be plowed down for the entire corn acreage, it may be possible to leave the old sod instead of seeding sweet clover. If so, greater savings in cash expenses and less decrease in net farm income will result.

The tenant-owner relationship must receive particular attention in making any adjustment. The owner's share of the corn crop will be reduced 77 bushels or $58. He will receive half the increase in AAA payments, or $36. His expenses will be reduced $5. On this basis, his net cash income will be reduced $17, but he will receive the benefits of the green-manure crop. The tenant's net cash income will not be changed materially by the adjustment.

Table 3.-- Estimated changes in annual costs and returns with the substitutio
of 5.4 acres of sweet clover green manure for grain corn
on Farm A

	Dollars	
Increased costs		
Corn to be purchased 153 bu. @ $.75		115
Sweet clover seed (15 pounds per acre)		6
		121
Reduced costs		
Corn fertilizer (200 pounds per acre)	16	
Net reduction in hired labor (80 hours @ $.25)	20	
Increased returns		
Net increase in AAA payments	71	107
DECREASE IN NET FARM INCOME		14

Increase in Net Farm Income per Acre of Green Manure Substituted for Grain Corn

The effect upon net farm income of shifting acreage of corn for grain to a green-manure crop has been indicated for an individual farm. Table 4 has been prepared as a guide to indicate the effect of this shift when applied on other farms. This table shows the change in income for each acre shifted when various yields, prices, and costs exist.

To give consideration to the many individual farm situations, corn yields varying from 30 to 80 bushels are shown. It has been indicated that by planting corn on the more productive land, and by using the same amount of manure on the smaller acreage, the average corn yield for the farm will be increased. In table 4, sections A and B are based on a 6-bushel increase in the average corn yield; sections C and D are based on a 3-bushel increase. In making the shift to green-manure crops, cash expenses for fertilizer, hired labor, etc. will be reduced. As these will vary from farm to farm, the tables are computed with the reduction in cash expense ranging from $3 to $12 an acre.

The tables are based on the assumption that 30 percent of the usual corn acreage is shifted to sweet clover, with allotment and parity payments totaling 14 cents per bushel of the normal yield. No increase in soil-building payments has been included, as many farms are already earning their entire allowance. No value was assigned for the reduction in the quantity of corn stover grown, as on many farms the last 30 percent of the stover has little value.

Following is an example of the use of these tables. A farmer plans to comply with his allotment by substituting a green-manure crop for grain corn. The usual corn yield for his farm is 40 bushels an acre but he believes that by reducing corn acreage he can increase his average farm yield 6 bushels an acre. He will have to pay 70 cents a bushel for corn bought. He estimates that he will be able to reduce cash costs $6 an acre. In table 4A, which shows an increased yield of 6 bushels and corn at 70 cents a bushel, follow the line for a 40-bushel yield to the column for a $6 reduction in cash costs. The table indicates that an increase of $1 per acre in net farm income may be expected from this adjustment. For a shift of 5 acres, the increase in income would be $5.

SHIFTING ACREAGE TO SEEDED PASTURE

The value of pasture has been repeatedly emphasized. Production specialists agree that a program designed to provide excellent pasture from May through October should supply dairy cows of average production with a large proportion of the nutrients needed during this period. In the following plans, the value of excellent pasture is illustrated by the substitution of a ladino clover mixture for grain corn.

On most farms, these advantages will result from such a shift:

(1) Compliance with the corn allotment program.
(2) Increased conservation.
(3) Reduced grain feeding.
(4) Reduced labor costs.
(5) No reduction in net farm income.

Allotment and parity payments to farmers in compliance with the program will replace an important part of the reduction in the amount of corn grown. With more and better pasture available throughout the season, grain feeding can be reduced consideraply. It is conservatively estimates that an acre of ladino pasture will replace the nutrients in 2,400 pounds of a grain mixture containing up to 24 percent protein.

For a number of years, ladino clover has been successfully grown on a limited acreage in this vicinity, but it is a relatively new crop to many local farmers. Therefore, these illustrations of its use are prefaced by questions and answers concerning it.

Table 4.- Increase in net farm income per acre of green manure substituted for grain corn

When the average corn yield on the farm is increased 6 bushels per acre:

A. - Price of corn is $.70 per bu.

Yield of corn per acre	Increase in income with various reductions in direct cash costs per acre			
	$ 3	$ 6	$ 9	$ 12
30 bu.	$ 2	$ 5	$ 8	$ 11
40 bu.	- 2	1	4	7
50 bu.	- 6	- 3	0	3
60 bu.	- 9	- 6	- 3	0
70 bu.	-13	-10	- 7	- 4
80 bu.	-17	-14	-11	- 8

B. - Price of corn is $.80 per bu.

Yield of corn per acre	Increase in income with various reductions in direct cash costs per acre			
	$ 3	$ 6	$ 9	$ 12
30 bu.	$ 0	$ 3	$ 6	$ 9
40 bu.	- 5	- 2	1	4
50 bu.	- 9	- 6	- 3	0
60 bu.	-14	-11	- 8	- 5
70 bu.	-19	-16	-13	-10
80 bu.	-23	-20	-17	-14

When the average corn yield on the farm is increased 3 bushels per acre:

C. - Price of corn is $.70 per bu.

Yield of corn per acre	Increase in income with various reductions in direct cash costs per acre			
	$ 3	$ 6	$ 9	$ 12
30 bu.	$-3	$ 0	$ 3	$ 6
40 bu.	- 7	- 4	- 1	2
50 bu.	-11	- 8	- 5	- 2
60 bu.	-14	-11	- 8	- 5
70 bu.	-18	-15	-12	- 9
80 bu.	-22	-19	-16	-13

D. - Price of corn is $.80 per bu.

Yield of corn per acre	Increase in income with various reductions in direct cash costs per acre			
	$ 3	$ 6	$ 9	$ 12
30 bu.	$ 5	$-2	$ 1	$ 4
40 bu.	-10	- 7	- 4	- 1
50 bu.	-15	-12	- 9	- 6
60 bu.	-20	-17	-14	-11
70 bu.	-24	-21	-18	-15
80 bu.	-29	-26	-23	-20

Questions and Answers about Ladino Clover 2/

(1) Q. What is ladino clover?
A. Ladino clover is a perennial legume similar to wild white clover but much larger. Because of its spreading character, it makes a dense growth, which attains a height of 10 to 12 inches.

(2) Q. What is the basis for our knowledge of ladino?
A. Ladino has been grown for the last 10 years by a number of experiment stations and farmers in the Northeast. There is still need for more experience, but it has had sufficient trial so that many farmers can afford to try small acreages of it on their farms.

(3) Q. To what soils is ladino adapted?
A. Ladino should do well on most fertile, moist soils where red clover is grown successfully.

(4) Q. How is ladino used?
A. The most important use for ladino is in seeded pasture mixtures. When a surplus of pasture is available early in the season, the first crop may be cut for hay or grass silage.
If hayland is mowed for several years, 2 pounds of ladino may be added to the seeding mixture. After the other clovers have disappeared, the ladino will remain and will help to maintain yield and quality.

(5) Q. How is ladino seeded?
A. Existing turf may be destroyed by plowing or harrowing and the ladino mixture broadcast and rolled into a smooth and firm seedbed. Like other clovers, the seed should not be covered over 1/2 inch deep.

(6) Q. What soil treatment is needed?
A. "Ladino cannot be grown successfully by the starvation method." Lime requirements are slightly less than for alfalfa (soil acidity corrected to pH 6). Manure, superphosphate, and potash should be applied liberally at seeding, and additional superphosphate and potash supplied by topdressing annually.

(7) Q. What are suggested seed mixtures for spring seeding?
A. 2 lbs. ladino) 2 lbs. ladino)
6 lbs. timothy) or 3 lbs. red or alsike clover)
2 lbs. orchard grass) 3 lbs. timothy) per acre
2 bu. oats) 3 lbs. orchard grass)
2 bu. oats)
Avoid turf-forming grasses such as blue grass and red top.

2/ These statements are based largely on information supplied by the Pennsylvania Extension Service, the New Jersey Agricultural Experiment Station, and the University of Connecticut.

(8) Q. How should ladino be pastured?
A. It is essential to practice rotation grazing. Divide the area into small plots; turn cows into a plot when the growth has reached 8 or 10 inches, and change to another plot when the growth has been pastured down to 4 inches.

(9) Q. What other feeds should be used with ladino?
A. Low protein roughage such as timothy hay should be fed each day before turning cows into ladino. Except for cows of high production, little grain feeding should be necessary.

(10) Q. What yields can be expected from ladino?
A. Under favorable conditions, ladino should provide larger yields of excellent feed throughout the season than almost any other type of pasture. In preparing farm plans, it has been conservatively estimated that 1 acre of ladino would replace the nutrients in 2,400 lbs. of a 24-percent dairy feed. (The same nutrients would be provided by 1,300 lbs. of corn and cob meal and 1,100 lbs. of cottonseed meal.) During the year of seeding, the oat nurse crop should be pastured once or twice and then the ladino will provide considerable pasture for the remainder of the season.

(11) Q. How long will ladino stands last?
A. Under favorable conditions with proper fertilization and careful grazing, ladino stands can be expected to last from 3 to 5 years or more.

On a Dairy Farm in the General-Farming Area (Farm B)

The farm - A 14-cow dairy farm in the General-Farming Area.

Proposed adjustment - Replace corn for grain with ladino clover pasture mixture.

Present business organization - Of the 102 acres in this dairy farm, 94 acres are cropland. In 1940, 22 acres of corn for grain were grown with a yield of 45 bushels an acre (table 5). Other crops included wheat, barley, alfalfa hay, and clover hay. Five tons of alfalfa hay and 220 bushels of wheat were sold. The remainder of the crops were fed to livestock (table 6). During the winter, the 14 cows receive alfalfa hay, corn stover, and a grain mixture containing corn and cob meal, barley, bran, and soybean oil meal (table 7). During the 6 summer months (May 1 to Nov. 1), 10 acres of cropland pasture, 2 acres of permanent pasture, and the clover aftermath are used. Nine tons of alfalfa hay are fed, and grain feeding is reduced 25 percent. The cows are grade Holsteins, with milk production of about 7,000 pounds per cow.

Table 5.- Crops on Farm B in 1940

Kind	Acres	Production
Corn for grain	22	990 bu.
Wheat	20	400 bu.
Barley	10	300 bu.
Alfalfa hay	18	45 tons
Clover (1 cutting)	14	14 tons
Cropland pasture	10	
Total cropland	94	
Permanent pasture	2	
Other land	6	
Total land	102	

Table 6.- Livestock on Farm B in 1940

Kind	Number
Cows	14
Heifers	6
Bull	1
Brood sows	3
Hogs	40
Layers housed	100
Chicks started	200
Horses	6

Table 7.- Feed used for 14 cows on Farm B. in 1940

Kind of feed	Winter 6 months	Summer 6 months
Grain mixture	Pounds	Pounds
Corn and cob meal	10,000	7,500
Ground barley	3,000	2,250
Wheat bran	2,000	1,500
Soybean oil meal	5,000	3,750
	20,000	15,000
Roughages	Tons	Tons
Alfalfa hay	23	9
Corn stover (1/3 eaten)	15	-
Pasture	Acres	Acres
Permanent	-	2
Cropland	-	10
Clover aftermath	-	14

The revised plan - Although this farm has more pasture than many farms in this area, the cows have been fed considerable grain during the 6 summer months. The revised plan allows an increase in pasture which can be expected to provide excellent feed throughout the season, and to make possible a reduction in grain feeding.

Table 8 indicates estimated changes in costs and returns which would result from substituting 6.6 acres of ladino clover pasture mixture for grain corn. The ladino will be seeded with oats in the spring of 1941. The oats can be pastured in early summer and the clover will be ready to pasture later in the summer. Costs of seeding the ladino have been spread over a period of 3 years, but under favorable conditions the stand should last 5 years or more.

An electric fence now used on the farm will allow the operator to fence and rotate the grazing of the ladino. Due to the palatability and high protein content of the ladino clover, cows should receive some low-protein roughage such as timothy hay before being turned into a heavy growth of ladino. Therefore the same amount of hay will be fed in the summer, but the poorer quality hay can be used up in this way.

The reduction in corn acreage will make some reduction in the amount of corn stover available for winter feeding. To replace this, 4 tons of timothy hay can be cut on the cropland pasture. With a reduction in corn acreage, it will be possible to make heavier applications of the available manure on the remaining acreage of corn, and a minimum yield increase of 2 bushels per acre has been estimated. On the basis of total digestible nutrients, it is conservatively estimated that the ladino clover pasture will replace 6 tons of the grain mixture fed during the summer. The cost of the wheat bran and soybean oil meal in this mixture will be a cash saving. The barley can be used to replace corn fed to hogs. Therefore, the entire shift will reduce production on corn 266 bushels, and will reduce corn feeding 115 bushels, with a net amount of 151 bushels of corn to be bought at a cost of $113.

Expenses for lime, fertilizer, and seed will be increased, but less day labor will be hired. With the increase in AAA payments, it is estimated that net farm income will be increased $25 annually. In addition, land will have been shifted to a soil-building, erosion-resistant crop.

In rotating the crops on this farm, corn is followed by wheat, part of which is followed by barley and part of which is seeded directly to alfalfa and clover. The alfalfa is harvested several years. The clover is harvested one year and pastured the next. By following all of the corn with 2 years of small grains, and by making some adjustments in the hay crops, it will be possible to substitute the ladino pasture for corn and still maintain essentially the same rotation.

Table 8. - Estimated changes in annual costs and returns with the substitution of 6.6 acres of ladino clover pasture mixture for grain corn on Farm B

			Dollars
Reduced costs			
Less purchased feed:			
3,000 lbs. soybean oil meal			48
1,200 lbs. bran			17
Corn fertilizer (200 lbs. per acre)			18
Net reduction in hired labor:			
$\frac{\text{200 hours at \$.25}}{\text{3 years}}$			17
Increased returns			
Net increase in AAA payments			97
			197
Increased costs			
Reduced corn production	266 bu.		
Reduced corn feeding	115 bu.		
Corn to be bought	151 bu. at $.75	113	
Net increase in lime costs:			
$\frac{\text{6.6 tons at \$4.00}}{\text{3 years}}$		9	
Fertilizer for ladino:			
300 lbs. superphosphate	$ 3		
150 lbs. potash	3		
	6 x 6.6 A.	40	
Seed for ladino:			
2 lbs. ladino	$ 2.00		
6 lbs. timothy	.60		
2 lbs. orchard grass	.80		
2 bu. oats	1.20		
	4.60		
$\frac{\text{\$ 4.60 x 6.6 acres}}{\text{3 years}}$		10	172
INCREASE IN NET FARM INCOME			25

On a Dairy Farm in the Quaker Dairy Area (Farm C)

The farm - A 13-cow dairy farm in the Quaker Dairy Area.

Proposed adjustment - Replace corn for grain with ladino clover pasture mixture.

Present business organization - The 70 acres of land on this farm include 46 acres of cropland. In 1940, 10.7 acres of corn for grain were grown with a yield of 60 bushels an acre. Other crops included barley, wheat, oats, soybean hay, clover hay, and sweet corn for canning (table 9). With the exception of the sweet corn and part of the wheat, all the crops were fed to livestock (table 10). The cows receive hay and heavy grain feeding during the winter. During the 6 summer months (May 1 to Nov. 1), grain feeding is slightly reduced, and only a small amount of hay is fed to supplement the 15 acres of permanent pasture (table 11). The cows are mixed grades, with milk production of about 6,000 pounds per cow.

Table 9.- Crops on Farm C in 1940

Kind	Acres	Production
Corn for grain	10.7	650 bu.
Wheat	5.7	165 bu.
Barley	8.2	310 bu.
Oats	2.0	100 bu.
Canning corn	4.5	8 tons
Soybean hay	5.4	16.2 tons
Cl. & Tim. hay	9.9	20 tons
Total cropland	46.4	
Permanent pasture	15.0	
Other land	8.6	
Total land	70.0	

Table 10.- Livestock on Farm C in 1940

Kind	Number
Cows	13
Young stock	1
Bull	1
Hens	25
Ducks	20
Hogs	2
Mule	1

Table 11.- Feed used for 13 cows on Farm C in 1940

Kind of feed	Winter 6 months	Summer 6 months
Grain mixture	Pounds	Pounds
Corn and cob meal	17,500	14,000
Ground barley	4,800	6,700
Ground oats	2,400	2,100
Soybean oil meal	6,000	2,000
	30,700	24,800
Roughages	Tons	Tons
Soybean hay	16.2	-
Clover and timothy hay	10	5
Pasture	Acres	Acres
Permanent	-	15

The revised plan - Table 12 indicates estimated changes in costs and returns which would result from substituting 3.2 acres of ladino clover pasture mixture for grain corn. Although the adjustment proposed for this farm is the same as for Farm B, results are slightly different. Both farmers feed considerable grain in the summer, but the grain mixture on Farm C is less expensive as it contains a larger proportion of home-grown feeds. It is estimated that the additional pasture will replace the ton of soybean oil meal bought in the summer and 76 bushels of the corn fed during this period. As corn production will be reduced by 192 bushels, it will be necessary to buy 116 bushels.

As on Farm B, the ladino will be seeded with oats in the spring. An electric fence is available for rotation grazing. Timothy hay will be fed before turning cows into a heavy stand of ladino. The reduction in corn stover will not be a problem on this farm. Expenses for lime, fertilizer, and seed will be increased, but costs of hired labor and tractor operation will be reduced. More manure will be available for use on other crops. With the increase in AAA payments, it is estimated that net farm income will be increased $7. In addition, land will have been shifted to a soil-building, erosion-resistant crop.

On this farm little difficulty should be experienced in making adjustments in the crop rotation to allow for the change from corn to ladino pasture. This operator has in general followed a 4-year rotation, but one with considerable flexibility. By putting part of the sweet corn on sod land in place of the field corn, and by shortening the rotation to 3 years on this area, it will be possible to continue the other crops as previously.

Increase in Net Farm Income per Acre of Ladino Clover Pasture Mixture Substituted for Grain Corn

The shift to seeded pasture has been illustrated above for two representative farms. Table 13 has been prepared as a guide to indicate the effect of this shift when applied on other farms. Change in net farm income for each acre shifted is shown, when various yields, prices, and costs exist.

Following is an example of the use of table 13. A farmer plans to comply with his allotment by growing 6 acres of ladino pasture instead of corn, which normally yields 50 bushels per acre. He will have to buy corn at $.80 a bushel, but the pasture will replace part of his dairy-grain mixture which costs $30 a ton. In section B, which shows corn at $.80 a bushel, follow the line for a 50-bushel yield to the column for grain at $30 a ton. An increase of $16 is shown. For a shift of 6 acres, the increase in net farm income would be $96.

In each case, it is necessary to adjust for the situation on the individual farm. The table is based on the estimate that the average yearly cash costs of growing ladino are $2 an acre less than for growing corn. This will vary from farm to farm, depending on just what costs are cash costs for the individual case. A saving in labor, for example, may be more important on a farm where considerable day labor is hired than on a farm where the operator does all his own work. If on a given farm, the

Table 12. - Estimated changes in annual costs and returns with the substitution of 3.2 acres of ladino clover pasture for grain corn on Farm C

				Dollars
Reduced costs				
Less purchased concentrate fed:				
2000 lbs. soybean oil meal				36
Corn fertilizer (200 lbs. per acre)				10
Seed corn and twine				5
Net reduction in tractor fuel and repairs:				
26 hours at $.50				
3 years				4
Net reduction in hired labor:				
96 hours at $.25				
3 years				8
Increased returns				
Net increase in AAA payments				58
Value of manure available for use on other crops:				
16 tons at $1.50				
3 years				8
				129
Increased costs				
Reduced corn production	192 bu.			
Reduced corn feeding	76 bu.			
Corn to purchase	116 bu. at $.80		93	
Net increase in lime costs:				
3.2 tons at $4.50				
3 years			5	
Fertilizer for ladino:				
300 lbs. superphosphate		$3		
150 lbs. potash		3		
		6 x 3.2 A.	19	
Seed for ladino:				
2 lbs. ladino seed		$2.00		
3 lbs. timothy seed		.30		
3 lbs. orchard grass		.50		
3 lbs. alsike		.90		
2 bu. oats		1.20		
		4.90		
$4.90 x 3.2 acres				
3 years			5	122
INCREASE IN NET FARM INCOME				7

cash costs of growing an acre of ladino are $5 less than for corn, $3 should be added to each figure in the table. On the other hand, if it is necessary to buy an electric fence to rotate grazing, this cost must be deducted from the increase in income computed from table 13. In the example above, it was determined that shifting 6 acres to ladino would increase income $96. If an electric fence costing $15 a year were needed, the increase in income would be only $81.

The estimated changes in income are based on the assumption that 30 percent of the usual corn acreage is shifted to ladino, with allotment and parity payments totaling 14 cents per bushel of the normal yield. No increase in soil-building payments has been included, as many farms are already earning their entire allowance. It has been conservatively estimated that 1 acre of ladino pasture would replace the nutrients in 2,400 pounds of a grain mixture containing up to 24 percent protein.

No value was assigned for the reduction in the amount of corn stover grown. On many farms the last 30 percent of the stover has little value, but if it is used, the net value over the cost of harvesting should be deducted from the increase in income computed from the table.

SHIFTING ACREAGE TO LEGUME SILAGE

In recent years, more and more farmers throughout the country have successfully grown and fed legume silage. The trend has largely been a shift from corn silage to alfalfa silage, although other crops are involved.

In adjusting to the 1941 corn acreage allotment program, many farmers in Southeastern Pennsylvania could consider shifting acreage from corn to a legume for silage. On most farms, this shift would have the following advantages:

(1) Compliance with the corn allotment program.
(2) More protein supplied by home-grown roughage.
(3) Less high-protein concentrate purchased.
(4) Increased acreage of erosion-resistant crops.
(5) Increased acreage of soil-building crops.
(6) No reduction in net farm income.

Should alfalfa be grown for silage, the yield per acre on many farms will be about the same as the ordinary yield of corn silage. The tonnage of alfalfa silage per acre is roughly three to four times the tonnage of hay. If the farmer is already growing alfalfa, it may be wise to ensile the first cutting from an acreage sufficient to fill the silo, and to harvest all later cuttings for hay. As the protein content of alfalfa silage is considerably greater than that of corn silage, less protein concentrate will be needed either for dairy feeding or for steer feeding. In recent feeding experiments at Pennsylvania State College, steers fed alfalfa silage, grain corn, and hay produced about equal finish and carcasses with more economical gains than steers fed corn silage, grain corn, protein supplement, and hay.

Table 13.- Increase in net farm income per acre of ladino clover pasture mixture substituted for grain corn

A. - Price of corn is $ .70 per bushel:

Yield of corn per acre	Increase in income with various costs of dairy grain mixture per ton				
	$ 25	$ 30	$ 35	$ 40	$ 45
30 bu.	$ 21	$ 27	$ 33	$ 39	$ 45
40 bu.	17	23	29	35	41
50 bu.	13	19	25	31	37
60 bu.	10	16	22	28	34
70 bu.	6	12	18	24	30
80 bu.	2	8	14	20	26

B. - Price of corn is $ .80 per bushel:

Yield of corn per acre	Increase in income with various costs of dairy grain mixture per ton				
	$ 25	$ 30	$ 35	$ 40	$ 45
30 bu.	$ 18	$ 24	$ 30	$ 36	$ 42
40 bu.	13	19	25	31	37
50 bu.	8	14	20	26	32
60 bu.	4	10	16	22	28
70 bu.	- 1	5	11	17	23
80 bu.	- 6	0	6	12	18

With a shift to alfalfa silage expense for hired labor would probably not be reduced; in fact, the period of harvest is such that it might interfere with the production of other crops. With the present outlook for a smaller supply of farm labor, adjustments which would reduce labor requirements might be more desirable. This would not be a serious problem on farms with a rather fixed and adequate labor supply.

In some localities, damage to the ensilage cutter from small stones picked up with the alfalfa may be a real problem in making this shift.

Unless the costs of shifting to alfalfa silage can be spread over a period of several years, it is doubtful if the shift will be profitable. An initial outlay for reinforcing the silo, adapting equipment, liming, fertilizing, and seeding will be required. For the 1941 season, the alfalfa will be seeded in a nurse crop which can be harvested for silage. This crop will probably yield less than alfalfa, and some decrease in net farm income can be expected. This loss can be made up in subsequent years. It is expected that over a 3-year period net farm income will be maintained or increased.

On a Steer-Feeding Farm (Farm D)

The farm - A medium-sized steer-feeding farm in the General-Farming Area.

Proposed adjustment - Substitution of alfalfa silage for corn silage.

Present business organization - Of the 153 acres in this steer-feeding farm, 145.4 acres are cropland. In 1940, 32.9 acres of grain corn were grown with a yield of 50 bushels an acre, and 7.5 acres of corn were cut for silage with a yield of 10 tons an acre. Other crops included barley, wheat, and clover hay (table 14). Each year, wheat and some clover hay are sold, and about 650 bushels of corn are bought. The corn bought, together with the other home-grown feeds, is used by the farm livestock (table 15). The steers are fed corn silage, clover hay, and a grain mixture of corn and cob meal, ground barley, wheat, and soybean oil meal (table 16). The feeding period varies from 250 to 300 days.

Table 14. - Crops on Farm D in 1940

Kind	Acres	Production
Corn for grain	32.9	1,645 bu.
Corn silage	7.5	75 tons
Wheat	44.2	1,050 bu.
Barley	12.9	370 bu.
Clover hay (1 cutting)	47.9	75 tons
Total cropland	145.4	
Permanent pasture	-	
Other land	7.6	
Total land	153.0	

Table 15. - Livestock on Farm D in 1940

Kind	Number
Cows	2
Young stock	1
Steers	25
Hogs	9
Hens	110
Mules	4

Table 16. - Feed for 25 steers on Farm D

Kind of feed	Present feeding plan	Final feeding plan
	Bushels	Bushels
Grain mixture		
Corn and cob meal	1,800	1,800
Ground barley	270	270
Ground wheat	480	480
	Tons	Tons
Soybean oil meal	4	-
Roughage		
Corn silage	70	-
Legume silage	-	95
Clover and timothy hay	23	1
Alfalfa hay	-	15

The revised plan - Table 17 indicates the estimated changes in costs and returns which will result from substituting 12.1 acres of alfalfa for 7.5 acres of corn for silage and 4.6 acres of grain corn. The alfalfa can be seeded in a nurse crop of oats and Canada field peas which will provide about 55 tons of silage in 1941. As the silo will hold a larger tonnage of grass than of corn, the first cutting from approximately 8 acres of clover will also be ensiled. With 95 tons of silage available for the steers, less hay will be fed, and hay sales will be reduced only 6 tons.

In the following years, it is estimated that the first cutting from 12.1 acres of alfalfa will furnish 55 tons of silage. Therefore, clover from 8 acres will again be needed to make a total of 100 tons of silage. The second and third crops of hay from the 12.1 acres of alfalfa will replace the clover put in the silo. With more silage available, hay sales will be increased in these years. The alfalfa will be harvested in 1942 and 1943; therefore the costs have been spread over a 3-year period (1941-43). Under favorable conditions, the stand should last considerably longer.

With the higher protein content of the legume silage, less protein concentrate will be purchased. In 1941, only 1 ton of soybean oil meal will be fed, and thereafter none will be needed. To maintain the same amount of total nutrients, an additional 50 bushels of corn will be fed each year. With a reduction in corn acreage, heavier applications of the available manure on the remaining corn acreage will be possible. A slight increase in corn yields can be expected. Total corn production, therefore, will be reduced only 175 bushels; corn feeding will be increased 50 bushels; and corn purchases will be increased 225 bushels.

Costs of lime, superphosphate, potash, and seed will be increased. It will be necessary to reinforce the silo and purchase an ensilage cutter which can handle grass. The annual additional cost of maintaining the silo has been estimated at $20, and $35 has been allowed for the increased

Table 17. - Estimated changes in annual costs and returns with the substitution of alfalfa silage for corn silage on Farm D

			Dollars
Reduced costs			
Less soybean oil meal bought:			
1941 - 3 tons less			
1942 - 4 tons less			
1943 - 4 tons less			
3-year average 3 2/3 tons less at $34			125
Corn fertilizer (200 lbs. per acre)			36
Seed corn and twine			18
Net reduction in tractor fuel and repairs:			
$\frac{\text{97 hours at \$.50}}{\text{3 years}}$			16
Net reduction in hired labor:			
$\frac{\text{183 hours at \$.25}}{\text{3 years}}$			15
Increased returns			
Net increase in AAA payments			198
Hay sales - 1941 - 6 tons less			
1942 - 9 tons more			
1943 - 9 tons more			
3-year average 4 tons more at $14			56
			464
Increased costs			
Corn bought - 225 bu. at $.80		180	
Net increase in lime costs:			
$\frac{\text{24.2 tons at \$4.50}}{\text{3 years}}$		36	
Fertilizer for alfalfa:			
800 lbs. superphosphate	$ 8		
300 lbs. potash	6		
	14		
$\frac{\text{\$14 x 12.1 acres}}{\text{3 years}}$		56	
Seed for alfalfa:			
10 lbs. alfalfa	$ 3.00		
4 lbs. red clover	.80		
4 lbs. timothy	.40		
1½ bu. oats	.90		
2 bu. field peas	8.00		
	13.10		
$\frac{\text{\$13.10 x 12.1 acres}}{\text{3 years}}$		53	
Molasses (8,000 lbs.)		80	
Strengthen and maintain silo		20	
Buy and maintain grass ensilage cutter		35	460
INCREASE IN NET FARM INCOME			4

annual cost of the cutter. Costs of hired labor and tractor operation will be somewhat reduced. When costs of growing alfalfa are spread over a 3-year period, it is estimated that net farm income will be slightly increased. In addition, land will have been shifted to an erosion-resistant, soil-building crop. If a good stand of alfalfa can be maintained for 4 years after 1941, the costs can be spread over a 5-year period, and net farm income will be increased $81 annually.

On a Dairy Farm (Farm E)

The farm - A 20-cow dairy farm in the General-Farming Area.

Proposed adjustment - Replace corn silage with alfalfa silage.

Present business organization - Of the 210 acres on this dairy farm, 131 acres are cropland. In 1940, 20 acres yielded 700 bushels of grain corn, and 7.9 acres yielded 65 tons of corn silage. Small grains, alfalfa hay, and mixed hay made up the remainder of the crops (table 18). The yields on this farm are slightly below average for the area. In 1940, 14 tons of hay were sold for $16 a ton. The remainder of the crops are fed to livestock on the farm (table 19).

The dairy herd receives corn silage, alfalfa hay, some corn stover, and a grain mixture included home-grown corn and oats, and a purchased 20 percent dairy feed (table 20). The cows are grade Holsteins, with annual milk production of about 8,000 pounds per cow. Judged by feeding standards, they receive a liberal ration with a considerable excess of protein.

Table 18.- Crops on Farm E in 1940

Kind	Acres	Production
Corn for grain	20.0	700 bu.
Corn silage	7.9	65 tons
Wheat	16.9	290 bu.
Barley	8.5	180 bu.
Oats	6.6	175 bu.
Rye	12.0	175 bu.
Alfalfa (2 cuttings)	28.0	45 tons
Mixed hay (1 cutting)	20.0	20 tons
Cropland pasture	11.2	
Total cropland	131.1	
Permanent pasture	15.0	
Woods pasture	25.0	
Other land	38.9	
Total land	210.0	

Table 19. - Livestock on Farm E in 1940

Kind	Number
Cows	20
Young stock	18
Bulls	2
Brood sows	5
Hogs	40
Layers housed	225
Chicks started	800
Horses	3

Table 20. - Feed used for 20 cows on Farm E in 1940

Kind of feed	Winter 6 months	Summer 6 months
Grain mixture	Pounds	Pounds
Corn and cob meal	11,340	11,340
Ground oats	2,160	2,160
20 percent dairy feed	17,500	17,500
	31,000	31,000
Roughages	Tons	Tons
Alfalfa hay	25	-
Corn silage	50	-
Corn stover (1/3 eaten)	12	-
Pasture	Acres	Acres
Cropland	-	11.2
Permanent	-	15.0
Woods	-	25.0
Hay fields	-	some

The revised plan - To comply with the corn allotment program, it is proposed to substitute alfalfa molasses silage for corn silage on this farm. Alfalfa acreage will be increased by shifting 7.9 acres from corn silage and half an acre from grain corn. To make the shift, oats with an alfalfa seeding will be grown for silage in 1941. In future years, the first cutting on 23 acres of alfalfa will be used to fill the silo. Silos will hold a larger tonnage of alfalfa than of corn, and after enough alfalfa has been cut to fill the silo, hay sales will be reduced, especially in 1941.

With more nutrients available in the form of silage, it should be possible to reduce grain feeding considerably. As alfalfa silage is high in protein, the reduction in grain feeding is made by eliminating 5 tons of the purchased 20-percent dairy feed. Savings in expenses for hired labor and tractor operation will be reduced somewhat, while expenses for lime, fertilizer, and seed will be increased. It will be necessary to strengthen the silo and purchase a new ensilage cutter to handle the alfalfa. The increase in AAA payments will include not only the corn allotment and parity payments, but also an increase in soil-building payments.

To be conservative, the changes in costs and returns shown in table 21 are based on spreading the costs of the shift over a 3-year period. It is estimated that net farm income will be increased $18 annually. Under favorable conditions it may be possible to maintain the alfalfa stand 5 years or longer. When the costs are spread over a 5-year period, it is estimated that the annual increase in income will be $38.

With a reduction in corn acreage, it will be possible to make heavier applications of the available manure on the remaining acreage of corn. The increase in yields should more than compensate for the half acre reduction in grain corn. The rotation on this farm has been flexible, and it should be possible to make the shift from corn to alfalfa without affecting the rotation seriously.

Table 21. - Estimated changes in annual costs and returns with the substitution of alfalfa silage for corn silage on Farm E

		Dollars	
Reduced costs			
Less purchased feed:			
5 tons 20 percent dairy feed			180
Corn fertilizer (100 lbs. per acre)			12
Net reduction in tractor fuel and repairs:			
$\frac{67 \text{ hours at } \$.50}{3 \text{ years}}$			11
Net reduction in hired labor:			
$\frac{120 \text{ hours at } \$.25}{3 \text{ years}}$			10
Increased returns			
Net increase in AAA payments			116
			329
Reduced returns			
Hay sales - 1941 - 14 tons less			
1942 - 4 " "			
1943 - 4 " "			
3-year average 10 2/3 tons less at $16		117	
Increased costs			
Net increase in lime costs:			
$\frac{16.8 \text{ tons at } \$4.00}{3 \text{ years}}$		22	
Fertilizer for alfalfa:			
800 lbs. superphosphate	$ 8		
300 lbs. potash	6		
	14		
$\frac{\$14 \times 8.4 \text{ acres}}{3 \text{ years}}$		39	
Seed for alfalfa:			
10 lbs. alfalfa	$ 3.00		
4 lbs. red clover	.80		
4 lbs. timothy	.40		
1½ bu. oats	.90		
	$ 5.10		
$\frac{\$5.10 \times 8.4 \text{ acres}}{3 \text{ years}}$		14	
Molasses (6,400 lbs.)		64	
Strengthen and maintain silo		20	
Buy and maintain grass ensilage cutter		35	311
INCREASE IN NET FARM INCOME			18

SHIFTING ACREAGE TO ALFALFA HAY

Farmers in Southeastern Pennsylvania feel that they have little need for more hay. In a number of cases, however, more hay could be used economically. The direct results of a shift to alfalfa hay will usually include:

(1) Compliance with the corn allotment program.
(2) Increased acreage of erosion-resistant crops.
(3) Increased acreage of soil-building crops.
(4) Reduced grain feeding.
(5) Reduced labor requirements.

One fact not always recognized is that cows fed a high-quality roughage will consume more roughage and will obtain a larger proportion of their nutrient requirements from it. In a number of cases, cows have maintained relatively high production when fed only on high-quality alfalfa hay. On farms where corn stover and mixed hay make up an important part of the ration, a shift to alfalfa should certainly permit some reduction in grain feeding. A shift from corn to alfalfa should also increase conservation on the farm. On the other hand, alfalfa is not adapted to all soils, and involves considerable expense for lime, fertilizer, and seed.

On a Dairy Farm (Farm F)

The farm - A tenant-operated, 11-cow dairy farm in the General-Farming Area.

Proposed adjustment - Replace corn for grain with alfalfa hay.

Present business organization - The crops and livestock on this farm are shown in tables 22 and 23. Sales of 150 bushels of corn, 100 bushels of wheat, and 15 tons of hay are divided equally between landlord and tenant. The landlord's half of the remaining corn, wheat, and barley is fed on another farm which he operates. The tenant provides livestock, machinery, and labor. He pays for purchased feed and other livestock expenses, and has all the receipts from sales of livestock and livestock products. Expenses for fertilizer and seed are shared equally.

During the winter the cows receive corn stover and a grain mixture of corn and cob meal and a purchased 32-percent feed (table 24). For the remainder of the year, they are maintained entirely on pasture. The cows are mixed grades with production of about 5,000 pounds a cow. Due to the exclusive use of corn stover as winter roughage, it is necessary to feed a large amount of the grain mixture. As judged by feeding standards, however, the cows do not receive an excess of nutrients.

Table 22. - Crops on Farm F in 1940

Kind	Acres	Production
Grain corn	36.7	1,600 bu.
Wheat	37.0	534 bu.
Barley	13.2	342 bu.
Clover hay	28.2	25 tons
Cropland pasture	16.1	
Total cropland	136.2	
Perm. pasture	11.0	
Other land	32.8	
Total land	180.0	

Table 23. - Livestock on Farm F in 1940

Kind	Number
Cows	11
Heifer	1
Bull	1
Horses	7
Brood sows	4
Pigs raised	24
Layers housed	150
Chicks hatched	350

Table 24. - Winter Dairy Feeding on Farm F
(11 cows - 200 days)

Kind of feed	Present plan	Revised plan	
		1941	Final
	Pounds	Pounds	Pounds
Grain mixture			
Corn and cob meal	21,000	5,250	2,800
32-percent dairy feed	6,000	4,000	-
	27,000	9,250	2,800
	Tons	Tons	Tons
Roughage			
Corn stover (1/3 eaten)	20	8	8
Oat hay	-	11	-
Clover hay	-	6	-
Alfalfa hay	-	-	22

The revised plan - To comply with the 1941 corn allotment program, it is proposed to grow 11 acres of alfalfa instead of grain corn. With a yield estimated conservatively at 2 tons an acre, 22 tons of alfalfa hay will be available to replace 260 bushels of corn, the 3 tons of purchased feed, and the stover formerly produced on the 11 acres (table 24). More protein and an equal amount of total nutrients will be provided by the shift.

The alfalfa will not be available in 1941. It is planned to seed the aflfala in a nurse crop of oats, which should yield at least 1 ton of oat hay par acre. By feeding the oat hay and 6 tons of the clover hay that is usually sold, grain feeding can be reduced in 1941 by 225 bushels of corn and 1 ton of the purchased feed. In future years the alfalfa will be available.

Differences in costs and returns for the farm business as a whole are summarized in table 25. To be conservative, the costs of establishing the alfalfa have been spread over a 3-year period (1941-43). Actually, it is probable that the alfalfa can be harvested for a longer period before reseeding. The revised labor needs can be handled by the present workers. With a reduction in corn acreage, it will be possible to make heavier applications of the available manure on the remainder of the corn ground, and a minimum-yield increase of 2 bushels an acre has been estimated. The shift from corn to alfalfa should have additional benefits from the standpoint of erosion control and conservation. As some corn follows corn each year in the rotation, substitution of alfalfa should not break up the rotation on the remaining acreage.

For the farm business as a whole, it is estimated that net farm income will be increased at least $17 annually. Under the present leasing agreement, this increase would not be divided equally between the tenant and landlord. The landlord would lose his share of the corn produced on the 11 acres and would pay some of the expenses of establishing the alfalfa without receiving any direct cash return from the hay fed by the tenant. It is estimated that under the present leasing agreement the landlord's income would be reduced $119 while the tenant's income would be increased $136.

As one method of resolving this difficulty, the tenant could pay the landlord for half the hay produced on the shifted acreage. In the present case, if the alfalfa were valued at $15 a ton and the oat hay at $10 a ton, the tenant would pay the landlord an average of $128 annually. This would result in equal sharing of the increase in net farm income. It is probable that farmers will be reluctant to make any change in their present leasing agreements. Actually, the above proposal means little change. As the corn crop has been shared equally, it is logical that the substituted alfalfa should also be shared equally. In the case of the alfalfa, the tenant buys the landlord's share for use on the farm.

Table 25. - Estimated changes in annual costs and returns with the substitution of 11 acres of alfalfa hay for grain corn on Farm F.

			Dollars	
Reduced costs				
Less purchased 32-percent feed:	$\frac{\text{7 tons at \$42}}{\text{3 years}}$			98
Twine				5
Increased returns				
Net increase in AAA payments				157
				260
Reduced returns				
Less corn sold - 150 bu. at $.60			90	
Less hay sold --	$\frac{\text{6 tons at \$14}}{\text{3 years}}$		28	
Increased costs				
Corn to be bought -	$\frac{\text{95 bu. at \$.70}}{\text{3 years}}$		22	
Net increase in lime costs:	$\frac{\text{22 tons at \$4.50}}{\text{3 years}}$		33	
Fertilizer for alfalfa:				
800 lbs. superphosphate		$ 8		
300 lbs. potash		6		
		14		
	$\frac{\text{\$14 x 11 acres}}{\text{3 years}}$		51	
Seed for alfalfa:				
10 lbs. alfalfa		$ 3.00		
4 lbs. red clover		.80		
4 lbs. timothy		.40		
$1\frac{1}{2}$ bu. oats		.90		
		5.10		
	$\frac{\text{\$5.10 x 11 acres}}{\text{3 years}}$		19	243
INCREASE IN NET FARM INCOME				17

On a Dairy and Steer-feeding Farm (Farm G)

The farm - A large, steer-feeding and dairy farm in the General-Farming Area.

Proposed adjustment - Replace corn for grain with alfalfa hay.

Present business organization - As on many farms in this area, the cropping system on Farm G is based on a 4-year rotation of corn, oats, wheat, and clover (table 26). Twenty steers are purchased in October and fed for 250 to 300 days (tables 27 and 28). A dairy herd of 8 cows is kept, with enough young stock to provide replacements, and small poultry and hog enterprises.

The livestock are maintained almost entirely on home-grown feeds. Poultry mash and small amounts of steer supplement, bran, and molasses are bought. In addition to the clover hay, all the corn stover is cut and fed. The operator feels that he needs more hay, and the recent introduction of a small acreage of alfalfa is a step in this direction.

Table 26. - Crops on Farm G in 1940

Kind	Acres	Production
Grain corn	30.0	1,500 bu.
Oats	25.9	800 bu.
Wheat	32.4	379 bu.
Clover (1 cutting)	30.7	35 tons
Alfalfa (3 cuttings)	5.0	12.5 tons
Cropland pasture	14.7	
Total cropland	138.7	
Permanent pasture	20.0	
Woods pastured	100.0	
Other land	41.3	
Total land	300.0	

Table 27. - Livestock on Farm G in 1940

Kind	Number
Cows	8
Young stock	5
Bull	1
Steers	20
Horses	4
Colts	3
Brood sow	1
Pigs raised	20
Layers housed	250
Pullet chicks started	300

Table 28. - Livestock feeding on Farm G in 1940

Kind of feed	8 dairy cows Winter (200 days)	 Summer (165 days)	20 steers (270 days)
	Pounds	Pounds	Pounds
Grain mixture			
Corn and cob meal	8,100	3,500	56,000
Oats	2,800	1,200	7,700
Bran	2,100	900	-
Molasses	700	300	-
Steer supplement	-	-	4,000
	13,700	5,900	67,700
Roughages	Tons	Tons	Tons
Clover hay	8.5	-	6
Alfalfa hay	8.5	-	-
Corn stover (1/3 eaten)	15	-	40
Pasture	Acres	Acres	Acres
(for cows and young stock)			
Permanent	-	20	-
Woods	-	100	-
Cropland	-	14.7	-
Clover aftermath	-	30.7	-

The revised plan - To comply with the corn allotment program, it is planned to grow 9 additional acres of alfalfa in place of corn for grain. At the present levels of feeding (table 28), it should be possible to increase hay feeding to both cows and steers. It is estimated that 2 tons of hay for the cows and 3.5 tons of hay for the steers could be fed to replace 107 bushels of corn. In addition, it will be necessary to use 6 tons of hay to replace the nutrients which the steers now obtain from the 9 tons of corn stover. This will result in a desirable increase in protein for the steers, as they receive relatively little protein at present. The estimated changes in costs and returns resulting from this shift are shown in table 29.

Table 29. - Estimated changes in annual costs and returns with the substitution of 9 acres of alfalfa hay for grain corn on Farm G.

			Dollars
Reduced costs			
Corn fertilizer (200 lbs. per acre)			27
Twine			4
Net reduction in tractor fuel and repairs:			
72 hours at $.50 3 years			12
Net reduction in hired labor:			
270 hours at $.25 3 years			22
Feed grinding			10
Increased returns			
Net increase in AAA payments			147
Increased hay sales:			
22 tons at $15 3 years			110
			332
Increased costs			
Reduced corn production	408 bu.		
Reduced corn feeding	107 bu.		
Corn to be bought	301 bu. at $.70	211	
Net increase in lime costs:			
18 tons at $4.00 3 years		24	
Fertilizer for alfalfa:			
800 lbs. superphosphate	$ 8		
300 lbs. potash	6		
	14		
$14 x 9 acres 3 years		42	
Seed for alfalfa:			
10 lbs. alfalfa	$ 3.00		
4 lbs. red clover	.80		
4 lbs. timothy	.40		
$1\frac{1}{2}$ bu. oats	.90		
	5.10		
$5.10 x 9 acres 3 years		15	292
INCREASE IN NET FARM INCOME			40

The increased acreage of alfalfa will be seeded in a nurse crop of oats harvested for hay in 1941. The costs of establishing the alfalfa have been spread over a 3-year period (1941-43). Actually, it may be possible to harvest the alfalfa several years longer before reseeding. In 1941, enough oat hay should be available for the increased feeding outlined above (11.5 tons), and in future years an additional 11 tons of alfalfa. Although it is indicated in table 29 that this 11 tons will be sold at $15 a ton, the operator may find that he can use it profitably on the farm.

Expenses for lime, fertilizer, and seed will be increased under the proposed plan, but expenses for hired labor and tractor operation will be less. With a reduction in corn acreage, it will be possible to make heavier applications of the available manure on the remainder of the corn ground, and a 2-bushel per acre increase in the average yield has been estimated. The shift from corn to alfalfa increases conservation on the farm.

Where the 4-year rotation is strictly followed, a shift from corn to a hay crop will reduce the acreage available for oats and wheat unless some oats follow sod, or unless the rotation is lengthened to include 3 years of small grains. Most farms have enough flexibility in the rotation to allow the increase in hay acreage.

SHIFTING ACREAGE TO BARLEY

On farms producing grain corn for feeding steers, hogs, or poultry, crop adjustments to a reduction in corn acreage are limited. These types of livestock require large quantities of low-protein grains in relation to the amount of roughage; therefore opportunities for using increased acreages of pasture or hay are limited. Steer feeders using corn silage might shift to grass silage, but a number of farms do not have silos. An increase in the acreage of tobacco, potatoes, vegetables, or wheat is limited by other allotment programs. A shift to barley may be the best of the remaining adjustments. As barley is classed as a semi-erosion-resistant crop, this shift should increase conservation on the farm. Barley can replace part of the corn in most rations. In the following sections, barley has been substituted for corn at the rate of 10 pounds of barley for 9 pounds of shelled corn.

On a Steer-feeding Farm (Farm H)

The farm - A steer-feeding farm in the Crop-specialty Area.

The proposed adjustment - Replace corn for grain with barley. (Soybean hay used as an emergency crop in 1940.)

Present business organization - The enterprises on this farm are typical of those on a number of medium-sized, tobacco-steer-feeding farms in the Crop-specialty Area. A 4-year rotation of grain corn, cash crops, small grains, and clover hay is followed (table 30). In October, 24 steers are bought at an average weight of 600 pounds (table 31). The steers are fed corn and cob meal, a small amount of barley, cottonseed meal, and clover hay for a 215-day feeding period (table 32). About 3 tons of hay are sold each year.

Table 30. - Crops on Farm H in 1940

Kind	Acres	Production
Grain corn	18	900 bu.
Wheat	12	360 bu.
Barley	6	210 bu.
Tobacco	10	14,000 lbs.
Potatoes	2	450 bu.
Tomatoes (canning)	6	36 tons
Clover and timothy hay	18	27 tons
Total cropland	72	
Permanent pasture	5	
Other land	3	
Total land	80	

Table 31. - Livestock on Farm H in 1940

Kind	Number
Steers	24
Cow	1
Mules	2
Layers housed	150
Chicks started	300

Table 32. - Feed used for 24 steers on Farm H in 1940

Kind of feed	Amount
	Pounds
Grain mixture	
Corn and cob meal	62,000
Ground barley	9,600
Cottonseed meal	7,700
	79,300
	Tons
Roughage	
Clover and timothy hay	13

The revised plan - To comply with the corn allotment program, this operator plans to replace 5.4 acres of corn with soybean hay in 1941 and with barley in future years. As a temporary measure, it is estimated that half the soybean hay can be ground and substituted for 48 bushels of corn and 1 ton of cottonseed meal in the grain mixture. It should be possible to sell the remaining 4 tons for at least $48 (table 33). In future years, the barley will be substituted for corn in the grain mixture (table 34). Minor changes in cash expenses, including some reduction in labor costs when the barley is grown, will be made. In 1941, a decrease in net farm income can be expected, but in future years income will be maintained at approximately the former level.

The revised crop rotation - This adjustment will require some changes in the crop rotation, as it is not usually considered good practice to plant barley following sod in place of corn. As there is less objection to growing potatoes and tomatoes on sod it is suggested that the 2 acres of potatoes and 3.4 acres of tomatoes take the place of corn on sod (table 35). The additional acreage of barley can then follow these crops, and will be followed by the usual small grain seeding. In 1941, soybean hay will be planted on corn stubble, taking the place of the potatoes and tomatoes which have been shifted to sod ground. On similar farms, slightly different changes in rotations will be necessitated in shifting from corn to barley. On most farms in this area, however, part of the corn acreage is followed by some crop which could be planted on sod. The increased barley acreage could then follow this crop and be followed by the usual small grain crop and hay.

Table 33. - Estimated changes in annual costs and returns with the substitution of 5.4 acres of soybean hay for grain corn on Farm H.

		Dollars	
Increased costs			
Reduced corn production	270 bu.		
Corn replaced by 4 tons of soybean hay	48 bu.		
Corn to be bought	222 bu. at $.80		188
Soybean seed			16
Feed grinding			8
			202
Reduced costs			
Cottonseed meal (1 ton)		32	
Seed corn and twine		8	
Increased returns			
Soybean hay sold (4 tons)		48	
Net increase in AAA payments		88	176
DECREASE IN NET FARM INCOME			26

Table 34. - Estimated changes in annual costs and returns with the substitution of 5.4 acres of barley for grain corn on Farm H.

		Dollars	
Increased costs			
Reduced corn production	270 bu.		
Corn replaced by 189 bu. of barley	145 bu.		
Corn to be bought	125 bu. at $.80		100
Reduced costs			
Labor hired for corn		11	
Increased returns			
Net increase in AAA payments		88	99
DECREASE IN NET FARM INCOME			1

Table 35. - Revised rotation on Farm H.

Year	Field							
	A		B		C		D	
		Acres		Acres		Acres		Acres
1940			tobacco	10.0				
	corn	18.0	potatoes	2.0	wheat	12.0	clover	18.0
			tomatoes	6.0	barley	6.0		
1941	tobacco	10.0					corn	12.6
	tomatoes	2.6	wheat	12.0	clover	18.0	potatoes	2.0
	soybeans	5.4	barley	6.0			tomatoes	3.4
1942					corn	12.6	tobacco	10.0
	wheat	12.0	clover	18.0	potatoes	2.0	tomatoes	2.6
	barley	6.0			tomatoes	3.4	barley	5.4
1943			corn	12.6	tobacco	10.0		
	clover	18.0	potatoes	2.0	tomatoes	2.6	wheat	12.0
			tomatoes	3.4	barley	5.4	barley	6.0
1944	corn	12.6	tobacco	10.0				
	potatoes	2.0	tomatoes	2.6	wheat	12.0	clover	18.0
	tomatoes	3.4	barley	5.4	barley	6.0		

Increase in Net Farm Income per Acre of Barley Substituted for Grain Corn

Table 36 is a guide to the effect on net farm income of substituting barley for grain corn. For various combinations of expected yields of corn and barley, this table shows the change in income which can be expected for each acre shifted. These estimated changes are based on the assumption that 30 percent of the usual corn acreage is shifted to barley, with allotment and parity payments totaling 14 cents per bushel of the normal corn yield. Less labor will be required for growing barley, and it has been estimated that for each acre shifted, there will be a reduction of $2 in cash expenses. The value of the barley straw has been considered equal to the value of the corn stover. In applying the table, adjustments must be made to correct these estimates for conditions on the individual farm.

Table 36. - Increase in net farm income per acre of barley substituted for grain corn

A. Price of corn is $.70 per bushel:

Yield of corn per acre	Increase in income with various yields of barley			
	20 bu.	30 bu.	40 bu.	50 bu.
30 bu.	$ 2	$ 7	$ 12	$ 18
40 bu.	- 2	3	9	14
50 bu.	- 6	0	5	10
60 bu.	-10	- 4	1	7
70 bu.	-13	- 8	- 2	3
80 bu.	-17	-12	- 6	- 1

B. Price of corn is $.80 per bushel:

Yield of corn per acre	Increase in income with various yields of barley			
	20 bu.	30 bu.	40 bu.	50 bu.
30 bu.	$ 0	$ 6	$ 13	$ 19
40 bu.	- 5	2	8	14
50 bu.	- 9	- 3	3	9
60 bu.	-14	- 8	- 2	5
70 bu.	-19	-13	- 6	0
80 bu.	-24	-17	-11	- 5

SHIFTS WHICH INVOLVE SECONDARY ADJUSTMENTS IN LIVESTOCK

Several adjustments to the corn allotment program for Southeastern Pennsylvania have been suggested. On most farms, the shifts in crops can be adopted without major changes in the farm organization. On some farms, however, changes in the kind or number of livestock on the farm may eventually follow any changes in the farm crops. Increases in legume pasture, hay, or silage will favor types of livestock which require high-protein roughage rather than livestock which can use relatively more of the low-protein grains. There may be some tendency, therefore, for dairy cows and young stock to replace steers and hogs. These adjustments are in line with the apparent comparative advantage in this area. The eventual results of making these adjustments over a period of years are illustrated in the following farm plans.

Steers Replaced by Young Dairy Stock on a General Farm (Farm I)

The farm - A large dairy and steer-feeding farm in the Crop-specialty Area.

Proposed adjustment - Substitute ladino pasture and alfalfa for corn and replace steers with young dairy stock.

Present organization - The crops on this farm include corn for grain and silage, tobacco, sweet corn for canning, wheat, barley, and mixed hay (table 37). Most of the feed crops are used for the 18 cows and 8 steers (table 38). The operator is feeding both cows and steers rather heavily on purchased grain, with limited use of pasture and high-quality roughage (tables 39 and 40). In most aspects this farm is similar to a number of other farms in the area. The steers, however, are bought at lighter weights and fed longer than usual, and the milk production of the dairy herd is rather low for Holstein and Guernsey cows.

The revised plan - It is proposed that young stock to provide replacements for the dairy herd be substituted for the steers on this farm, and that the cropping system be reorganized to meet more closely the feed requirements of the livestock kept (tables 37 and 38). Increased pasture is provided for the 6 summer months, more and better hay and silage will be available for the winter, and the grain mixture will consist almost entirely of home-grown feeds (tables 39 and 40). Rations provided are ample according to feeding standards, and approximate the nutrients provided by the present rations.

Table 37. - Crops on Farm I

Kind	Present plan			Proposed plan		
	Acres	Production	Sales	Acres	Production	Sales
			Dollars			Dollars
Grain corn	34.3	1,700 bu.	1/ 300	20.0	1,000 bu.	1/ 127
Corn silage	5.0	50 ton	–	–	–	–
Wheat	14.1	450 bu.	264	10.0	320 bu.	1/ 145
Barley	10.0	400 bu.	–	10.0	400 bu.	1/ 68
Tobacco	12.4	17,360 lbs.	2,356	13.5	18,900 lbs.	2,565
Sweet corn (canning)	6.4	18 ton	180	–	–	–
CTA hay (2 cuttings) 2/	11.3	23 ton	–	–	–	–
CTA hay (1 cutting) 2/	–	–	–	10.0	12.5 ton	–
Mixed hay	8.0	12 ton	–	–	–	–
Alfalfa	–	–	–	20.0	(37.5 T. hay (50 T. Silage)	–
Cropland pasture	8.5			10.0		
Ladino pasture	–			10.0		
Sudan pasture	–			6.5		
Total cropland	110.0			110.0		
Permanent pasture	5.1			5.1		
Other land	4.9			4.9		
Total land	120.0			120.0		
Total sales			3,100			2,905

1/ Under the present plan, 400 bushels of corn are sold. Under the proposed plan, 170 bushels of corn, 170 bushels of wheat, and 85 bushels of barley are sold.

2/ Clover, timothy, and alfalfa hay.

Table 38. - Livestock on Farm I

Kind	Present plan					Proposed plan				
	Number	Purchases		Sales		Number	Purchases		Sales	
	kept	Quant.	Dol.	Quant.	Dol.	kept	Quant.	Dol.	Quant.	Dol.
Cows	13	3	405	3	150	18	–	–	4	200
Young stock	1	–	–	–	–	13	–	–	3	100
Calves	–	–	–	15	75	–	–	–	8	40
Bull	1	–	–	–	–	1	–	–	–	–
Steers	8	3,200 lbs.	264	8,800 lbs.	946	–	–	–	–	–
Layers	400	–	–	250	200	400	–	–	250	200
Chicks	700	700	63	300	240	700	700	63	300	240
Pigs	3	3	15	–	–	3	3	15	–	–
Mules	4	–	–	–	–	4	–	–	–	–
Total			747		1,611			78		780

Table 39. - Feed used for 18 cows on Farm I

Kind of feed	Present plan Winter 6 mos.	 Summer 6 mos.	Proposed plan Winter 6 mos.	 Summer 6 mos.
Grain mixture	Pounds	Pounds	Pounds	Pounds
Corn and cob meal	10,000	10,000	10,800	10,800
Ground barley	5,000	5,000	5,400	5,400
Dairy feed(30 percent)	15,000	15,000	-	-
Wheat bran	-	-	1,300	1,300
	30,000	30,000	18,000	18,000
Roughages	Tons	Tons	Tons	Tons
Corn silage	36	-	-	-
Alfalfa silage	-	-	50	-
Cl., tim., alf. hay	17.5	8.5	-	-
Alfalfa hay	-	-	27	-
Corn stover	6	-	-	-
Pasture 1/	Acres	Acres	Acres	Acres
Permanent	-	5.1	-	5.1
Cropland	-	8.5	-	10.0
Ladino clover	-	-	-	10.0
Sudan grass	-	-	-	6.5
Hayland (3rd growth)	-	11.3	-	-
" (2nd & 3rd ")	-	8.0	-	10.0
Alfalfa (3rd growth)	-	-	-	10.0

1/ For cows and young stock.

Table 40. - Feed used for steers and young stock on Farm I

Kind of feed	Present plan - 8 steers	Proposed plan - 18 young stock
Grain mixture	Pounds	Pounds
Corn and cob meal	33,200	3,750
Ground barley	11,000	3,750
Steer supplement (30%)	11,000	-
Fitting ration	-	7,500
Skim-milk powder	-	1,200
	55,200	16,200
Roughages	Tons	Tons
Corn silage	14	-
Cl., tim., alf. hay	4	6
Alfalfa hay	-	10
Corn stover	3	-
Pasture	(none)	(following cows)

Under the proposed plan, corn acreage has been reduced about 50 percent, which is considerably more than the expected reduction under the 1941 corn allotment program. Acreage of tobacco has been increased 1 acre to equal the allotment on this farm. A shift has been made from mixed clover, timothy, and alfalfa hay to straight alfalfa on the land which will not be used for tobacco in the rotation. The silo will be filled with alfalfa instead of corn. It is also suggested that 2 pounds of ladino clover seed be added to the mixed-hay seedings to improve the aftermath for pasture. A practical 5-year rotation is shown in table 41.

Table 41. - Proposed rotation on Farm I

Field	Crop	Acres
A	Grain corn	20.0
B	Tobacco	13.5
	Sudan grass pasture	6.5
C	Wheat (s. CTA)	10.0
	Barley (s. alf.)	10.0
D	Clover, timothy, alfalfa hay	10.0
	Alfalfa silage and hay	10.0
E	Cropland pasture	10.0
	Alfalfa silage and hay (pasture 3rd growth)	10.0

Ten additional tons of lime will be bought annually because of the increase in legumes. Seven calves will be retained each year to replace 4 cows annually. Allowance has been made for the cost of remodeling buildings to take care of the young stock, and for the purchase of a stronger silo to hold the alfalfa silage. Liberal allowance has been made for increases in other expenses. An electric fence will facilitate rotation grazing, and thus make more efficient use of the pasture. The revised organization should not increase labor requirements, as more land is put into hay and pasture.

From the standpoint of conservation, the proposed plan makes a shift from intertilled crops to sod. As such, it should prevent some erosion, even though erosion is not a serious problem in this relatively flat area. Over a period of 5 years the increased use of legumes should result in at least a 5 percent increase in yields.

By following a constructive breeding program, the shift from growing steers to growing young dairy stock for replacements should make it possible for a good dairyman to increase materially the production of his herd. Even though the additional production were sold at surplus prices, such an adjustment should make possible within a few years an income much larger than has been estimated in table 42.

It is estimated that the effects of the changes outlined will result in a slight reduction of crop sales and net livestock sales, and an increase in miscellaneous expenses. These changes, however, will be more than offset by the decreased expense for grain formerly bought, together with the increase in AAA payments. An $86 increase in net cash farm income is estimated, without allowing for any eventual increase in yields or in milk production.

Table 42. - Financial summary for Farm I

Item	Present plan	Proposed plan
	Dollars	Dollars
Cash receipts		
Crop sales	3,100	2,905
Livestock sales	1,611	780
Milk sales (95,000 lbs.)	2,043	2,043
Egg sales	600	600
AAA payments	180	328
Total	7,534	6,656
Cash expenses		
Hired labor	1,440	1,440
Dairy and steer feed	850	280
Poultry feed	405	405
Fertilizer and lime	615	665
Livestock bought	747	78
Miscellaneous livestock expense	200	300
Upkeep of buildings & machinery	760	800
Interest on indebtedness	-	75
Other cash expenses	715	725
Total	5,732	4,768
NET CASH FARM INCOME	1,802	1,888

It may not be possible or advisable to make this entire shift in 1 year. As the 1940 hay seedings included more alfalfa than usual, it will be possible in 1941 to fill the silo with alfalfa and have as much hay as planned under the final program. Half of the ladino can be seeded with oats in the spring of 1941, and the rest seeded the following spring. The 11.3 acres of mixed hay will be kept down for hay and pasture in 1941. Ten acres of the 1940 cropland pasture will be plowed for corn, and the rest left for pasture another year. Depending on how soon the young stock are acquired, the sudan grass pasture can be grown in 1941 or the sweet corn crop can be continued another year.

Steers Replaced by Dairy Cows on a General Farm (Farm J)

The farm - A diversified farm in the Crop-Specialty Area.

Proposed adjustments - Shift silage and grain-corn acreage to pasture, and replace the steer enterprise with additional dairy cows.

Present business organization - The combination of enterprises on this farm is typical of many farms in the Crop-Specialty Area. Medium-sized dairy and poultry enterprises are operated; tobacco and potatoes are grown as cash crops; and steers are fattened during the winter months (tables 43 and 44). High-quality roughage is fed to the cows and steers during the winter. Lacking adequate pasture, the cows are also fed roughage during part of the summer. They receive heavy grain feeding both summer and winter (table 45). On this farm, the corn yield per acre and the milk production per cow are above average. However, the milk is sold for manufacturing purposes at a lower than average price.

The revised plan - In adjusting to the corn allotment program, it is proposed to shift 3.3 acres of corn silage and 4.2 acres of grain corn to pasture seeded with ladino clover mixture. When the adjustment is well-established, greater benefits will be realized by making some adjustments in the farm livestock. It is proposed, therefore, to discontinue steer feeding and to add 5 cows to the dairy herd (tables 43 and 44). In so doing, livestock which can use leguminous pasture will replace livestock which require less pasture and more corn and small grains.

The steer enterprise has been a method of converting corn, small grains, and some unsalable roughage into a salable product. At the same time, manure is made available for maintaining soil fertility. In the last several years, the enterprise has seldom returned to the operator much above the actual farm price of the feed consumed, even with a liberal credit allowed for the manure.

By discontinuing steer feeding, feed will be available for the increased dairy herd, and present dairy-feeding practices can be maintained during the winter months. In the summer pasture season, the same nutrients will be provided, but ladino pasture will replace considerable purchased feed (table 45). The addition of more pasture will allow the summer feeding period to be extended. Less manure will be produced, but not as much will be needed for the smaller acreage of corn. The legume crop will increase soil fertility.

Table 46 indicates the effect of this reorganization on income. Sales of livestock and livestock products will be lower, and cash feed expense and livestock purchases will be reduced by a larger amount. At most seasons, sufficient labor will be available. During some planting and harvesting periods, cash labor expense will be increased. A liberal allowance for remodeling the barn and for other incidental items was included in the budget. No net increase in the operator's investment will be made.

The additional milk will be sold for manufacturing purposes at the same price as that received for the present supply. It is estimated that when the complete adjustment is made, net cash farm income will be increased $199 annually. On farms receiving a higher price for milk, the increase in income would be even greater.

Table 43. - Crops on Farm J

Kind	Present plan			Proposed plan		
	Acres	Production	Sales	Acres	Production	Sales
			Dollars			Dollars
Grain corn	13.5	1,100 bu.	-	9.3	745 bu.	-
Corn silage	11.3	80 ton	-	8.0	56 ton	-
Wheat	17.1	465 bu.	250	17.1	465 bu.	250
Barley	10.0	390 bu.	-	10.0	390 bu.	-
Tobacco	5.8	7,260 lbs	1,131	5.8	7,260 lbs	1,131
Potatoes	5.0	1,500 bu.	800	5.0	1,500 bu.	800
Alfalfa	13.3	46 ton	-	13.3	46 ton	-
Ladino pasture	-	-	-	7.5	-	-
Total cropland	76.0			76.0		
Permanent pasture	5.0			5.0		
Other land	3.0			3.0		
Total land	84.0			84.0		
Total sales			2,221			2,221

Table 44. - Livestock on Farm J

Kind	Present plan					Proposed plan				
	Number	Purchases		Sales		Number	Purchases		Sales	
	kept	No.	Dol.	No.	Dol.	kept	No.	Dol.	No.	Dol.
Cows	13	2	240	3	150	18	4	480	5	250
Young stock	3	-	-	-	-	3	-	-	1	30
Calves	-	-	-	8	160	-	-	-	12	240
Bulls	1	-	-	-	-	1	-	-	-	-
Steers	14	14	1,092	14	1,665	-	-	-	-	-
Layers	325	-	-	150	120	325	-	-	150	120
Chicks	700	700	77	300	165	700	700	77	300	165
Brood sows	1	-	-	-	-	1	-	-	-	-
Hogs	6	-	-	2	52	6	-	-	2	52
Pigs	-	-	-	10	50	-	-	-	10	50
Mules	4	-	-	-	-	4	-	-	-	-
Totals			1,409		2,362			557		907

Table 45. - Livestock feeding on Farm J

Kind of feed	Present plan		Proposed plan	
	Winter 32 wks.	Summer 20 wk	Winter 6 mos.	Summer 6 mos.
FOR COWS AND YOUNG STOCK				
	Pounds	Pounds	Pounds	Pounds
Grain mixture				
Corn and cob meal	22,400	15,000	24,500	12,500
Barley	6,400	4,000	8,750	8,500
Chopped oats	3,200	2,000	3,600	500
Bran	6,400	4,500	7,200	1,500
Dairy feed (16 percent)	-	4,000	-	-
Dairy feed (24 percent)	-	2,000	-	-
Soybean oil meal	3,200	-	3,400	-
Molasses	1,600	1,000	1,800	1,800
	43,200	32,500	49,250	24,800
Roughages	Tons	Tons	Tons	Tons
Alfalfa	20	8	30	8
Corn silage	40	-	56	-
Corn stover	12	-	15	-
Barley straw	2	2	6	4
Pasture	Acres	Acres	Acres	Acres
Permanent	-	5	-	5
Ladino clover	-	-	-	7.5
FOR STEERS				
Grain mixture	Pounds			
Corn and cob meal	16,100			
Barley	7,700			
Bran	4,000			
Soybean oil meal	7,000			
	34,800			
Roughages	Tons			
Alfalfa hay	10			
Corn silage	40			
Corn stover	12			
Barley straw	6			

Table 46. - Financial summary for Farm J

Item	Present plan	Proposed plan
	Dollars	Dollars
Cash receipts		
Crop sales	2,221	2,221
Livestock sales	2,362	907
Milk sales 1/	1,640	2,200
Egg sales	660	660
Outside labor	80	80
AAA payments	120	328
Total	7,083	6,396
Cash expenses		
Hired labor	700	750
Dairy feed	433	426
Poultry feed	340	340
Steer feed	168	-
Other feed expense	145	115
Fertilizer and lime	395	440
Livestock bought	1,409	557
Gas and oil	237	222
Upkeep of buildings & machinery	575	615
Other cash expenses	615	666
Total	5,017	4,131
NET CASH FARM INCOME	2,066	2,265

1/ Under the present plan, milk sales are 117,000 pounds. Under the proposed plan, milk sales will be 157,000 pounds.